4. Education and Sociologic Evaluation Component Summaries

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I. Report Overview

This report summarizes socioeconomic goals and accomplishments for the second year of the five-year project, "Biologically Intensive Areawide IPM of the Russian Wheat Aphid and Greenbug." Our primary goal in the second year was to recruit wheat producers in a six state area as participants in focus group discussions and economic cost-of-production interviews.

In brief, our specific goals and accomplishments for 2002-2003 were:

1. Recruit wheat producers from around the study region to participate in the project.
    - ✓ Upon completion of first year focus groups and cost-of-production interviews, we have 147 wheat producers as project participants.
2. Establish procedures for the protection of human subjects as participants and obtain necessary institutional approval.
    - ✓ We obtained approval from the Institutional Review Board at Oklahoma State University prior to conducting focus groups and interviews. We will submit a continuation for the second and subsequent years of interviews. (The University of Nebraska did not require us to request approval of this project.)
3. Conduct focus group discussions with paired groups of 8-10 producers in each study location.
    - ✓ 138 of the 147 participants attended one of 20 focus group sessions, conducted between January and March, 2003. Focus group discussions were transcribed. Transcripts have been entered into a database program and coded for further synthesis and analysis. We are still in the process of generating a complete focus group summary report.
4. Conduct the first of four annual cost-of-production interviews with each participant.
    - ✓ As of November 2003, we have completed first year cost-of-production interviews with all but 2 of the participants. This report provides some descriptive statistical summaries of the participant group by state and zones of the project region. We are currently generating farm budgets from interviews and will be providing these to participants prior to contacting them for second year interviews to be conducted between December 2003 and March 2004.

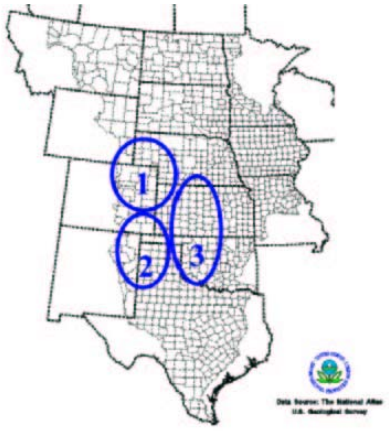
Section II of the report provides complete details regarding each of these goals and accomplishments for the year. Section III presents descriptive statistics from our first interview, describing farm operations of the participating producers, wheat varieties grown, and types of crop rotations utilized. This baseline data will be important background information for interpreting subsequent reports and in evaluating changes in production strategies occurring

during the course of the project. Section IV concludes the report with a summary of plans for the third project year, including additional planned analyses of focus group and interview data and plans for the second year cost-of-production interviews with each producer.

II. Socioeconomic Assessment Goals and Accomplishments, 2002-2003

A. Selection of Participants

Goals. Project study locations would be counties with established demonstration field sites, plus surrounding counties to expand the area represented. (In practice, these would be areas within a reasonable driving distance for producers to attend half-day focus group discussions.) The larger project team had established a total of 22 demonstration field sites prior to the initiation of insect field sampling in the fall of 2002. These 22 fields consisted of 11 paired demonstration fields, with one field having either continuous wheat or a wheat-fallow rotation and the other field having a rotational system, with one or more alternate crops grown with winter wheat. The sites were distributed in three study area regions of interest, discussed in earlier project reports and illustrated in the figure at right.



Producers farming these demonstration fields would be included in focus group discussions and cost-of-production interviews. We would recruit an additional 7-9 producers for each of the established demonstration sites and approximately equal numbers of diversified-crop and "wheat only" producers distributed within the three study area zones. We would select participants in consultation with members of the project team, cooperative extension agents, local cooperatives, and wheat organizations in each state. We were interested in recruiting growers who were relatively successful at farming these contrasting systems and who were conscientious in their selection of production practices. (Thus, we acknowledged that our participants would not be a representative, or random, sample of wheat producers in the study region.)

Project participants. Participation of wheat producers in the project would initiate with focus group sessions. Working primarily with Cooperative Extension agents in twelve locations were we would conduct focus groups, we invited a total of 190 producers to focus group sessions. In most cases, Cooperative Extension agents made the initial contact with producers, followed by an invitation letter from the focus group moderator. The moderator or assistant moderator then made a personal phone call to each producer 1-3 days prior to the focus group, to remind them of the meeting time and to answer questions.

Upon completion of 20 focus group sessions, 138 producers had attended a focus group. An additional 12 who were not able to attend were scheduled for our cost-of-production interview. This gave us a total of 150 project participants to be interviewed after completion of focus groups. As of November, 2003 we hade completed a total of 145 interviews with 2 interviews yet to be completed and 3 individuals who refused to be interviewed (dropped their involvement in

the project). Thus, the total number of participating producers by the end of the first year of program implementation was 147. Table 1 summarizes the number of participants by project zone and state. We provide additional breakdowns of participant numbers by focus group locations at the end of the report in Table 5.

Table 1. Number of demonstration sites and project participants by project zone and state, 2003

Project zones	States	Demonstration sites	Project participants
1	Nebraska	2	14
	Wyoming	2	14
	N. Colorado	2	18
2	S. Colorado	4	19
	Texas	4	27
3	Kansas	2	13
	Oklahoma	6	42
Totals		22	147

Consistent with the larger number of demonstration sites in Colorado and Oklahoma (6 in each state, with Colorado split between northern and southern areas), we have more participating producers in those states—a total of 42 in Oklahoma and 37 in Colorado. Producers in Nebraska and Wyoming combine for a total of 28 participants in that part of the study area. We have the least number of producers in Kansas because we have only two pairs of demonstration sites in that state, located in Reno County.

Cropping system characteristics of project participants. While we sought equal numbers of participants who would represent "wheat only" and "diversified" cropping systems, we understood that wheat producers would not fall neatly into these dichotomous categories. However, we did want to learn about producer's decisions to produce "wheat only" or to adopt alternate crops as part of a planned rotation. The separation of these groups did not need to be perfect, but to facilitate discussion we wanted participants in each focus group to have had common experiences in making these decisions. Since we knew the assignment of individuals to a focus group would be imperfect, we utilized the same focus group questions for all focus groups.

We relied on Cooperative Extension agents to assign growers to focus groups based on their knowledge about producers in their area. In some locations we had smaller numbers of participants at focus groups scheduled for "wheat only" producers. This left us with the impression that we had less success at recruiting producers who only farmed winter wheat. However, it was not until we completed our interviews that we were able to systematically assess cropping systems used by the project participants.

In the interview we asked producers to describe their typical crop rotations and the approximate number of acres they had in each system. We also recorded acres in continuous wheat or wheat-fallow systems. After coding these results and determining the number of different rotational systems described, we were able to summarize crop rotations for the participant group.

Figure 1 illustrates that out of 141 producers for whom we have crop rotation data, 33 produced "wheat only." A larger proportion, 56 out of 141, described one or more planned crop rotations for all of their cultivated wheat acres (represented in the figure category, "all acres diversified"). The remaining 52 producers had some acres in a wheat only system and some in a diversified system. This category includes a broad spectrum of producers, including those who are primarily continuous wheat or wheat-fallow as well as those at the other end of the spectrum who have some limited acres in a wheat-only system for a variety of reasons.

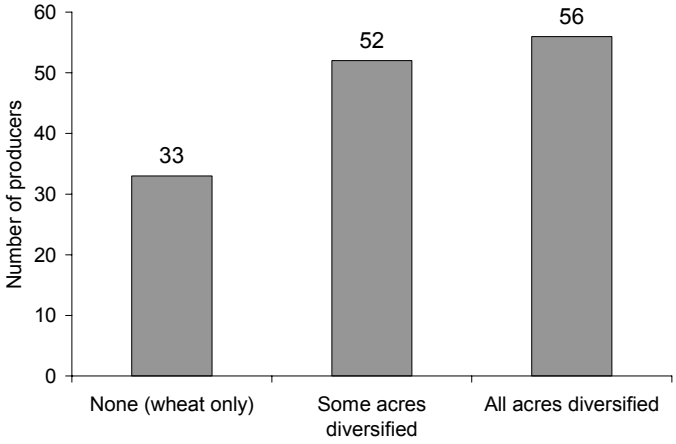


Figure 1. Three categories of crop rotations with dryland winter wheat, 2002 Cost-of-Production Interview

Another way to consider the use of crop rotations among our participant group is the percentage of the 141 interview respondents with "wheat only" systems and the percentage with one or more "diversified" cropping systems (recognizing that some have both types). About 77 percent of the 141 producers (109) had some or all of their acres in a "diversified" system, while about 60 percent (85) had some or all of their acres in a "wheat only" system. Again, these figures reflect the large overlap in the use of these types of dryland wheat cropping systems represented by the middle category in Figure 1.

The type of crop rotations used also varies greatly by producer and locality. We recorded a total of 92 different combinations of wheat, alternative crop, and fallow periods used in dryland cropping systems among the 141 interviewees.

In short, while our initial suspicions were correct—we did have fewer project participants with "wheat only" production systems—we where successful in recruiting a participant group representing a broad range of cropping systems currently used with dryland winter wheat in the project study area. We examine further details regarding crop rotations among our participant group later in this report. Additional analyses to follow this report will allow us to evaluate producers' considerations in the adoption of crop rotations with winter wheat. Subsequent interviews and focus groups will allow us to evaluate any changes in production strategies.

Development of Project Brochures and Quarterly Updates to Facilitate Participation. As part of the grower recruitment effort it was necessary to develop some project educational materials

and to establish a working relationship with Cooperative Extension personnel in each study area. The socioeconomic team met with groups of extension personnel in each study location prior to scheduling of focus group sessions. We also assisted in the development of a program brochure, a quarterly update mailing to keep everyone informed, and revisions of the project website. The focus group moderator developed a detailed information packet, detailing plans for the focus group sessions, for distribution to Cooperative Extension personnel and other interested parties.

Guidelines for the Protection of Human Subjects as Participants. The project team recognized that focus groups and cost-of-production interviews would be a form of research involving human subjects. As such, it would be necessary to follow established federal guidelines for the protection of human subjects. This would involve following procedures of Informed Consent and obtaining approval of focus group and interview questions from one or all of the Institutional Review Boards at participating universities on the project.

We requested review of our information collection procedures from Institutional Review Boards (IRB) at Oklahoma State University and the University of Nebraska. The Nebraska IRB did not require us to submit a formal review. We obtained approval for the administration of focus groups and our first cost of production interview from the IRB at Oklahoma State University on January 23, 2003. The approval expires on January 22, 2004, prior to which we must submit a request for continuation of the study for the second of four years in which we will be collecting information from project participants.

The crucial elements for protection of project participants as human subjects on this project are the use of an Informed Consent document to assure voluntary participation of subjects and the use of proper procedures to maintain confidentiality of information collected from subjects.

In following these procedures we utilized an approved Informed Consent document, completed by all project participants prior to their participation in focus group discussions. The Informed Consent details our purpose and procedures in information collection, anticipated benefits, and contact information for the project team. Participants signed two copies of the Informed Consent, one for our records and one for them to keep.

To maintain confidentiality of information obtained from project participants, we removed all names and personally identifying information from focus group transcripts. On interview sheets and in computerized data entered from interviews, we utilized nonsystematic subject numbers to maintain confidentiality.

B. Focus Groups with Producers

Project Goals. As indicated in the project proposal, the purpose of focus group discussions was to obtain baseline data on crop production methods in wheat and alternate crops, with emphasis on management of insects, weeds, and diseases. Focus groups would provide detailed information about crop production decisions from the producers' perspective. We also hoped to identify IPM information needs of producers in each of the two categories of production systems.

The *focus group* is an established research method in the social sciences. Focus group discussions are designed to be informal and nonthreatening, taking advantage of insights that can

be gained from group discussion as opposed to a one-on-one interview or questionnaire administered by a researcher. Focus groups require careful preparation by a skilled moderator. The success of the focus group depends on creating a permissible environment for discussion while at the same time accomplishing the research goal of capturing the discussion for systematic synthesis and comparison. To assist in this process, focus group discussions would be audio recorded and transcribed.

In consultation with the Bureau for Social Research at Oklahoma State University, the project team determined that focus groups would be conducted in paired sets of three. The "three-of-a-kind" rule would provide a sufficient number of focus groups in each region for analysis of topics discussed. Following this rule, we would have a total of eighteen focus groups (two pairs of three focus groups—or a total of six—in each of three study area zones). However, in Zone 3 we conducted an additional pair of focus groups in southwestern Oklahoma, due mainly to the geographical distance of this area from other demonstration sites. This gave us a total of twenty focus groups.

Focus Group Outcomes. We conducted focus groups between January and March, 2003 as follows:

- ✓ Zone 1: Six focus groups—two each in Brush, Colorado, Scottsbluff, Nebraska, and Pine Bluffs, Wyoming. We conducted these groups between March 4 and March 6.
- ✓ Zone 2: Six focus groups—four in the Texas Panhandle between February 18 and February 27, and two in Lamar, Colorado on March 12.
- ✓ Zone 3: Eight focus groups—two in southeastern Oklahoma (Altus), four in north central Oklahoma (Cherokee and Blackwell), and two in South Hutchinson, Kansas. We conducted these groups between January 28 and February 11.

On most focus group days we held two focus groups in one location: a morning focus group with diversified crop producers and an afternoon focus group with "wheat only" producers. We typically provided a catered noontime meal for participants from both groups. This provided an opportunity to visit informally, introduce members of the project team, and establish a time frame for conducting the cost-of-production interviews with each producer. Cooperative extension agents were invaluable, both in selecting participants and in making local arrangements for focus group sessions.

We used the same question set for all focus groups. Figure 2 displays the focus group "question route." In contrast to a questionnaire or structured personal interview, a focus group question route provides general direction for discussion. The initial one or two questions are presented in "round robin" fashion, whereby the moderator asks the group to "go around the table" to get acquainted and help everyone feel comfortable speaking in the group. Once the group appears at ease, the moderator poses subsequent questions to the group as a whole, allowing anyone to initiate responses and others to provide follow-up responses or clarifying questions. The moderator interjects to probe for details, to solicit responses from silent group members, or to move the discussion to the next topic.

Since questions are loosely structured and participants may respond to one another, useful information regarding topics covered may occur at any point in the discussion, not just in response to a specific question posed by the moderator. Consequently, the typed transcript is invaluable in reassembling the discourse at a later time to evaluate information obtained and to compare focus group sessions.

The Bureau for Social Research at Oklahoma State University provided transcription services. To facilitate analysis of focus groups, the focus group moderator converted typed transcripts into a textual database and analysis software program, C-I-SAID. The software enables the user to code discussion segments from transcripts, both to catalog the discussion and to create variables for analysis and integration.

A subsequent report will provide a detailed summary of focus group discussions including major wheat pest problems, limitations in adoption of crop rotations, use of resistant wheat varieties, and perceptions regarding insect scouting and beneficial insects.

C. Cost-of-Production Interviews

Goals for Interviews. Data from annual cost-of-production interviews will enable us to evaluate the economic effectiveness of cropping systems actually in use among the project participants. This will be accomplished by developing annual enterprise budgets, showing per-acre costs and returns, for dryland wheat, fallow, and each of the alternative crops. These budgets will summarize input and machinery costs for each cultural operation as performed through the production cycle. Enterprise budgets for individual crops will be consolidated into a simulated total farm budget.

In addition to providing our research team with a detailed view of the economic outcomes of various crop production systems, these budgets and subsequent reports will also provide a useful product and educational tool for participating producers. Annual budget reports will be generated for each individual producer.

Accomplishments for Interviews. As of November 2003 we have completed 145 of 147 of the first of four annual interviews with each producer. We entered results into spreadsheet format and tallied results.

Preliminary calculations for cost of production budgets are presently under way, with completion expected in time to use these when completing the second-year crop production interviews beginning in December of 2003. These budgets are anticipated to show the growers and research team the actual cost of production for each crop and for the system as a whole over time. Budget reports will be given to the growers and discussed during the second, third, and fourth interviews. Statistical analysis will be done to determine if there are significant differences in the production systems, regions, states, and crops being observed during this project. The next section of the report provides some initial statistical summaries of the production systems of our project participants from these interviews.

1. Briefly tell us about yourself:
   - Who you are
   - The place you consider home
   - How long you have been farming
   - Crops that you currently grow, including cattle if you run them.

   You do not need to tell us how many acres you produce or head of cattle you stock. Instead, just give us a sense of what you produce.

2. Let's go around the room one more time. Tell us about:
   - Crops you have grown in the past but no longer grow.
   - Any new crops you are thinking about growing (or new cropping practices).
   - Anything else you would like to add.

3. If a grower is thinking about a new crop (or new cropping practice) here, what are his greatest challenges or limitations in being able to do that?

4. How does your wheat look this year? (recently planted crop in your area).
   - Follow-up: We are interested in how you make decisions.
   - What were some decisions you made in planting your current wheat crop?
   - Are these the decisions you typically make?
   - If anything different, whom did you talk to about it? (What information did you consult?)

5. Now I am going to ask about weeds, plant diseases, and insect problems for wheat in this area. (Create a list on your index card as we mention some.)
   - What are some problem weeds for wheat fields in this area?
   - What are some wheat diseases you find here?
   - What are some insects you find in wheat fields here?

6. We have mentioned several types of pests in wheat, including insects, weeds, and plant diseases. With all of these in mind, **what have been your biggest pest concerns over the past year or two**?
   - Follow-up: How have you dealt with these?
   - Whom did you ask for advice? (What source of information did you consult, if any?)

7. Thinking back over a longer time period (the past 10 years), **what have been the biggest pest problems for wheat production in this area?**

8. What do you like most about your farm operation (wheat/cattle/crop rotations)? (Use index cards to list 2-3 things you like most.)

Figure 2. Focus group question route

III. Production Characteristics of Participating Wheat Producers

We asked participants a series of questions to determine the cost of production for their cropping systems in the 2002 crop year. These questions were designed to address the cost of production, and glean some additional demographic and cropping system information. Descriptive information that will assist in understanding some of the decision making can be developed from these questions. In addition to the tables presented here, we also asked about the use of crop insurance, lease rates and types, and USDA Farm Service Agency base acres on farms. Results are being analyzed and used in generating farm budgets, and will be reported upon completion.

Age of Growers. Participating growers were asked for their age at the time of the interview. All growers were willing to share this information with the interviewers. The growers in the study averaged four to eight years younger than the average farmer for their respective states (except in Nebraska, where the growers were nearly one year older than the state average). Based on the selection criteria and methods noted previously, it is not surprising that many of the managers willing to participate in this study were younger than the average for their state.

Table 2. Average age of participating producers in project by state and zone compared to state averages, 2002 cost-of-production interview

Project Zone	State	Number of Participants	Project Average Age	State* Average Age
1	Nebraska	14	53.4	52.5
1	Wyoming	14	49.6	54.4
1	N. Colorado	18	45.9	53.8
1	Zone total	46	49.2	53.1
2	S. Colorado	19	49.8	53.8
2	Texas	25	47.9	56.6
2	Zone total	44	48.7	56.2
3	Kansas	13	49.7	54.4
3	Oklahoma	42	49.6	55.1
3	Zone total	55	49.6	54.8
Project Total		145	49.2	55.3

* State averages from USDA, 1997 Census of Agriculture.

Project Acres. Producers in the project farm near 350,000 acres of dryland and irrigated land in six states. These producers are primarily dryland producers as noted by the nearly 9 to 1 ratio of dryland to irrigated land. In addition, there is a significant amount of both CRP land and pasture or rangeland on these farms. Many of the producers are involved in livestock operations to utilize feedstuffs grown on the farm as well as the acres of rangeland resources indicated.

Table 3. Acres and livestock for project growers by zone and state, 2002 cost-of-production interview

Project Zone	State	Dryland Acres	CRP Acres	Range-Pasture Acres	Irrigated Acres	Total Head Livestock
1	Nebraska	23,786	6,553	20,218	3,354	13,584
1	Wyoming	30,436	4,527	12,007	1,757	1,916
1	N. Colorado	79,914	12,287	23,689	2,389	3,646
1	Zone total	134,136	23,367	55,914	7,500	19,146
2	S. Colorado	71,789	22,188	34,764	7,822	4,588
2	Texas	42,808	3,588	33,523	27,444	6,837
2	Zone total	114,597	25,776	68,287	35,266	11,425
3	Kansas	23,065	995	6,152	2,265	2,537
3	Oklahoma	76,206	3,222	38,150	1,881	20,155
3	Zone total	99,271	4,217	44,302	4,146	22,692
Project Total		348,004	53,360	168,503	46,912	53,263

Winter Wheat Varieties. Project producers planted over 180,000 acres of winter wheat for harvest in 2002. There were 66 different varieties planted by these producers ranging from more than 39,000 acres of Jagger planted in Colorado, Kansas, Oklahoma, and Texas to 10 acres of Wahoo planted in Wyoming. Much of the Jagger is planted in the areas that may use wheat for grazing if conditions and prices merit the practice. Jagger is one of the premier varieties for forage production.

Russian wheat aphid resistance is important to growers in zones 2 and 3, thus a large number of acres of these varieties were planted for the 2002 crop. It will be interesting to compare these numbers with those from 2004 and 2005 crops with the recent discovery of Russian wheat aphid that does not seem to be affected by the present resistance. The most popular of the Russian wheat aphid resistant varieties was Prairie Red with 10,785 acres planted by participating growers. Halt followed closely behind with 9,803 acres planted by these producers for 2002 harvest. Additional acres were planted to Prowers 99 and Yumar.

In viewing figures reported in Table 10, it is important to keep in mind that we have the largest numbers of project participants in Colorado and Oklahoma. As a result, popular varieties grown in those states have both larger numbers of producers and acres planted among the participant group. (Please refer back to Table 1 and the section of the report describing project participants.)

Table 4. Most popular varieties of winter wheat planted by project participants, 2001-2002 crop production year (number of acres planted and number of producers by state for varieties over 500 acres).

State ===>	Colorado		Kansas		Nebraska		Oklahoma		Texas		Wyoming		Project Total	
Variety	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres	No.
Jagger	400	2	6,990	12			28,861	36	2,874	6			39,125	56
Akron	15,444	15			285	1					1,700	3	17,429	19
Buckskin					1,913	5					11,184	11	13,097	16
Pioneer 2174			561	3			11,208	20					11,769	23
Prairie Red*	10,785	12											10,785	12
Pioneer 2137			1,759	6	669	1	4,489	10	3,266	6	300	1	10,483	24
Halt*	9,803	8											9,803	8
TAM 110	1,174	3							8,297	10			9,471	13
TAM 107	5,231	7							2,000	2			7,231	9
Lamar	3,990	7									1,100	1	5,090	8
Alliance	2,240	4			2,349	5					270	1	4,859	10
Prowers 99*	4,325	5											4,325	5
TAM 105									3,800	3			3,800	3
Triumph 64									2,824	2			2,824	2
T13	2,100	1											2,100	1
JagX7853							1,930	1					1,930	1
Coronado			946	3			912	3					1,858	6
Quantum	1,748	1			100	1							1,848	2
Yuma	1,780	3											1,780	3
Scout 66	640	1			500	1			500	1			1,640	3
Pioneer 2163			204	2			1,400	1					1,604	3
Trego	1,599	3											1,599	3
Longhorn			44	1			1,330	2	220	1			1,594	4
Yumar*	1,565	4											1,565	4
Pronghorn					1,130	5					180	1	1,310	6
Larned									1,200	1			1,200	1
TAM 200									1,055	4			1,055	4
OK 101							978	7					978	7
Custer							950	3					950	3
Early Triumph									800	1			800	1
Ogallala							250	1	521	2			771	3
TAM 302									660	2			660	2
HG9							608	1					608	1
Baca	603	1											603	1
Millineum					565	2					21	1	586	3
Above	530	4			28	1							558	5
Niobrara					543	1							543	1

* Russian wheat aphid resistant varieties.

Crop Rotations. As we observed earlier in Figure 1, some of our project participants clearly farm "wheat only" and others clearly farm crop rotations on all of their cultivated dryland wheat acres. Many others fall somewhere in-between for various reasons. In observing statistical summaries for these crop rotations, it is important to keep in mind that producers varied in the degree to which they adhere to a strict crop rotation. The data provides us with a general description of crop rotations among the study population. However, the acres in various rotations represent general approximations rather than definite statistical data points.

Since crop rotation is a central focus of the project, it will be important to carefully assess how area wheat producers are actually using crop rotation in their farming systems. Data from our first cost-of-production interview, in conjunction with grower comments in focus groups, will allow us to describe where producers' were in terms of crop rotations before initiation of the project. Subsequent interviews and more detailed statistical analyses of data will allow us to explore the issue further and also to observe any changes in production strategies.

As noted earlier in the report, we recorded a total of 92 different combinations of wheat, alternative crop, and fallow periods used in dryland cropping systems reported by the 141 interviewees. Figure 3 presents additional detail regarding the distribution of producers' acreage by separating the 92 different types of crop rotations into four categories in a 2 X 2 classification of systems: "wheat only" vs. "diversified" cropping systems and "continuously-cropped" vs. "fallow-interrupted" cropping sequences.

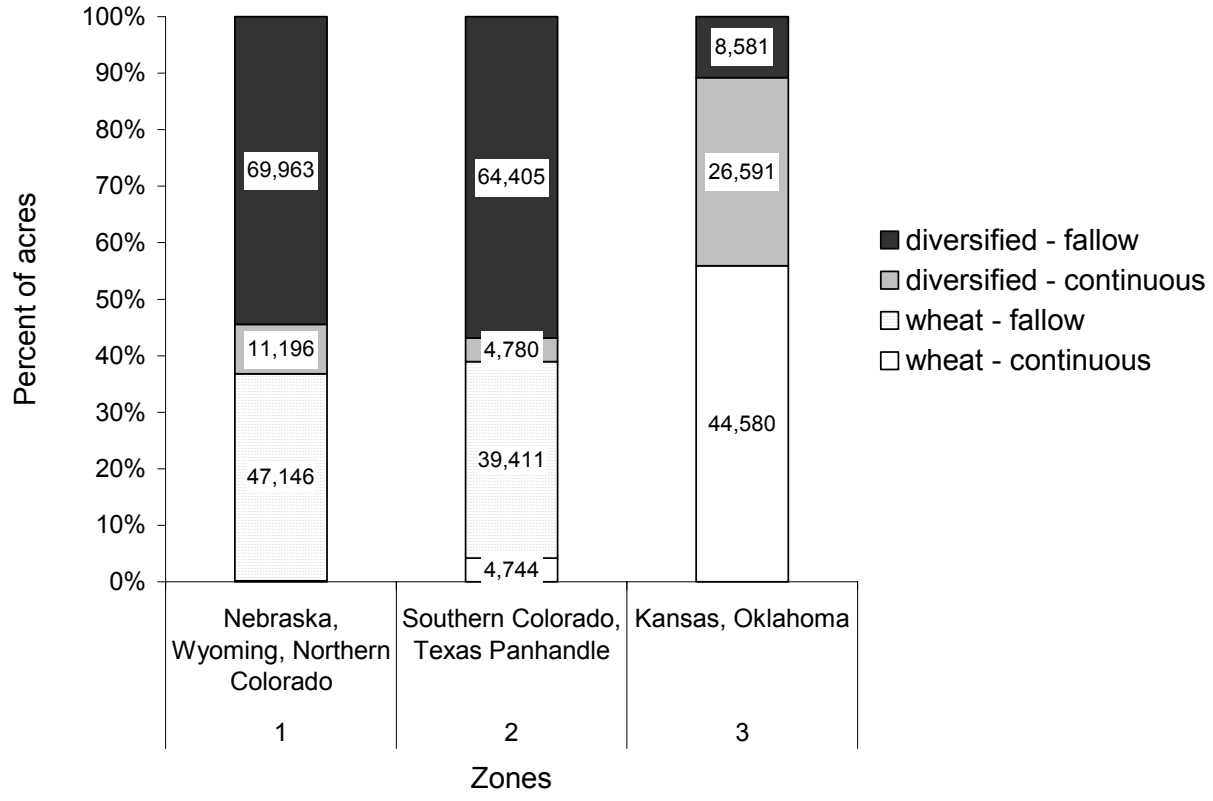


Figure 3. Acreage totals reported by producers in four categories of cropping systems comparing three regions of the project study area, 2002 cost-of-production interviews

Considering the two “wheat only” and “diversified” categories, out of a combined sum of 321,547 acres in dryland wheat systems reported by 141 interview respondents, 185,516 acres were farmed in a “diversified” system (one or more rotational crops grown between winter wheat and possibly fallow periods). The remaining 136,031 acres were in a “wheat only” system (either continuous wheat or a wheat-fallow-rotation). Considering the use of fallow periods versus continuous cropping, proportions in this graph reflect the prevalent use of fallow in Zones 1 and 2, and the contrasting tendency for continuous cropping in Zone 3 (Kansas and Oklahoma).

Producers in Zone 3 of the project area had the smallest proportion of collective acreage in diversified systems (about 40 percent of acreage in diversified systems as compared to over 60 percent among producers in the other two zones). However, Zone 3 producers had the greatest variation in different cropping combinations comprising these diversified systems, with 50 different combinations of cropping sequences (not shown in figure). This pattern reflects the relatively large proportion of acres in continuous wheat among Zone 3 producers.

Zone 2 producers had the least variation in types of rotation systems represented, with 18 combinations. The most common type of crop rotation in Zone 2 was wheat-sorghum-fallow, which accounted for 24 out of 43 rotational systems mentioned by producers in Zone 2.

Zone 1 producers indicated 35 rotation cropping combinations. As with Zone 2, the most common form of crop rotation was a wheat-alternate crop-fallow system, with 21 out of 68 responses representing this form. The most popular alternate crops in this system for Zone 1 were millet (15 responses), sunflower (8 responses), and corn (8 responses).

Also interesting in Figure 3 is the use of continuous diversified cropping among a few producers in Zones 1 and 2, areas in which producers customarily utilize a fallow period between crops. Among project participants in Zone 1, these systems involved years of sunflower and possibly a second summer crop—millet, corn, sorghum, oats—grown between years of winter wheat. In the Texas panhandle (Zone 2), a small number of producers were planting one or more years of sorghum, cotton, sunflowers, or corn between years of winter wheat. Over the course of the project we can observe the extent to which producers in these zones continue with continuous cropping systems.

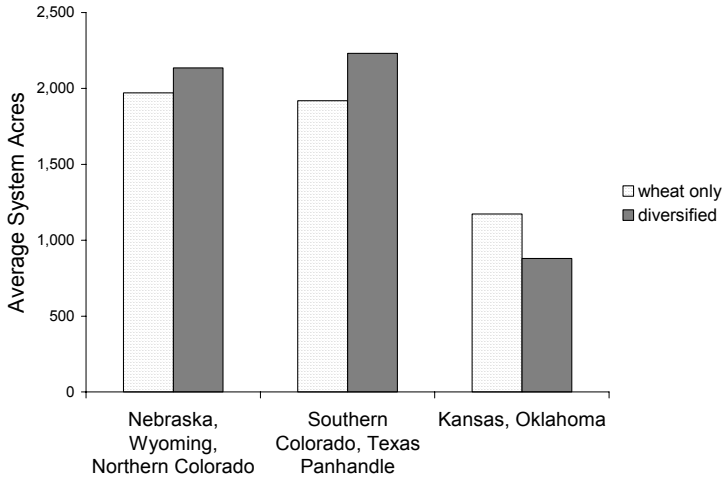


Figure 4 Average system acres in "wheat only" and "diversified" cropping systems comparing producers in the three project zones, 2002 cost-of-production interviews

Another important contrast for our project zones is the overall fewer acres collectively farmed by Zone 3 producers. This characteristic reflects the fact that Zone 3 producers tend to farm fewer acres at higher average yields compared to

producers in the other two zones. Figure illustrates this tendency for acreage farmed by our project participants in the three zones, comparing average acres in "wheat only" and "diversified" systems. This figure illustrates the tendency for higher average proportion of acres in continuous wheat compared to diversified systems among Zone 3 producers. We see the opposite tendency for the other two zones. Though the differences in the averages are small, this pattern was consistent with our expectation that rotational cropping in Zones 1 and 2 would be occurring in larger production systems while wheat-fallow may prevail in smaller systems. The small difference we observe in averages here is likely due to the relatively smaller number of "wheat only" producers among our participant group, and also the fact that a significant proportion of our participants utilize both wheat only and diversified cropping systems.

These details regarding crop production for our project participants provide important background information for interpreting subsequent reports, as well as baseline figures for evaluating production changes observed over the course of the project. A complete report of focus groups, combined with our farm budget reports will enable us to explore dimensions of producers' decision making in their use of these systems.

IV. Plans for Project Year 3 (2003-2004)

Our goals for the current project year are:

1. Complete a detailed focus group summary report, as a supplement to the current progress report. We plan to complete this report by January, 2004.
2. Complete enterprise and simulated total farm budgets for each producer. Reports will be given to producers prior to conducting second year interviews. Once budgets are generated, we can develop comparisons of cost effectiveness for different types of production systems utilized by the participant group and also evaluate changes in these systems observed during the project study period.
3. Conduct our second year cost-of-production interviews between December 2003 and March 2004.
4. Conduct additional analysis of interview data and focus groups for project educational materials, professional publications, and other forms of information dissemination.

Table 5. Project participation summary by focus group locations, 2003

			Focus groups		Interviews	
Group	**Location**	**Date**	**Invited**	**Attended**	**Planned**	**Completed**
01	Scottsbluff, NE	5-Mar	**10**	**5**	**5**	**5**
02	Scottsbluff, NE	5-Mar	**13**	**6**	**8**	**8**
03	Pine Bluffs, WY	6-Mar	**13**	**9**	**10**	**10**
04	Pine Bluffs, WY	6-Mar	**11**	**5**	**6**	**5**
05	Brush, CO	4-Mar	**11**	**10**	**11**	**10**
06	Brush, CO	4-Mar	**11**	**9**	**9**	**8**
Zone 1 Subtotal			**69**	**44**	**49**	**46**
07	Lamar, CO	12-Mar	**12**	**10**	**10**	**10**
08	Lamar, CO	12-Mar	**10**	**8**	**9**	**9**
09	Etter, TX	18-Feb	**9**	**5**	**7**	**7**
10	Perryton, TX	24-Feb	**5**	**3**	**6**	**4**
11	Umbarger, TX	20-Feb	**9**	**9**	**9**	**9**
12	Claude, TX	27-Feb	**9**	**4**	**5**	**5**
Zone 2 Subtotal			**54**	**39**	**46**	**44**
13	Hutchinson, KS	11-Feb	**9**	**8**	**8**	**8**
14	Hutchinson, KS	11-Feb	**8**	**5**	**5**	**5**
15	Blackwell, OK	30-Jan	**8**	**5**	**5**	**5**
16	Blackwell, OK	30-Jan	**8**	**7**	**7**	**7**
17	Cherokee, OK	31-Jan	**9**	**8**	**8**	**8**
18	Cherokee, OK	31-Jan	**9**	**9**	**9**	**9**
19	Altus, OK	28-Jan	**8**	**6**	**6**	**6**
20	Altus, OK	28-Jan	**8**	**7**	**7**	**7**
Zone 3 Subtotal			**67**	**55**	**55**	**55**
Total, All Zones			**190**	**138**	**150**	**145**